



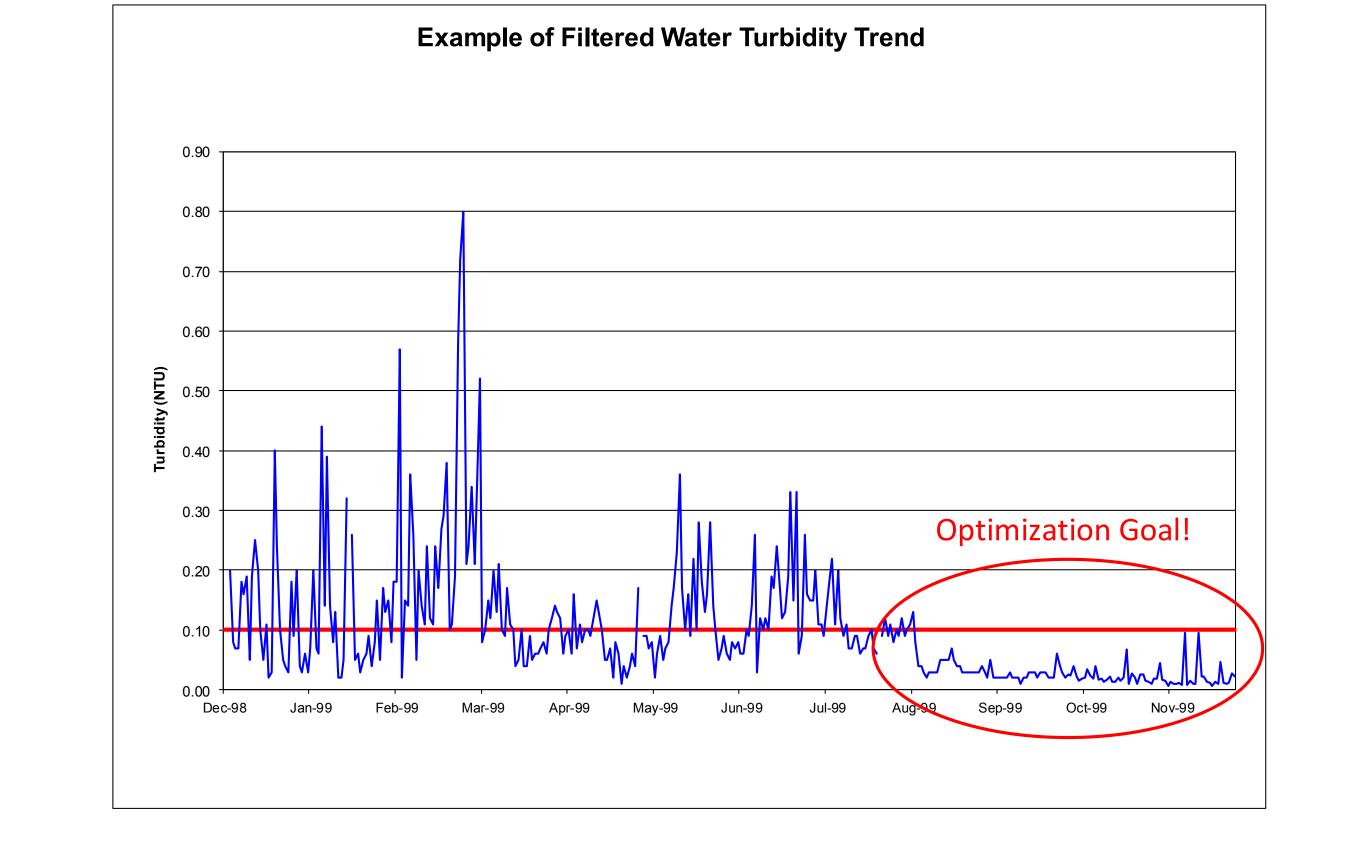
#### Treatment Optimization at All Regulated Surface Water Treatment Plants

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#### 1.) Objective:

The purpose of this poster is to present the State of Connecticut Dept. of Public Health Drinking Water Section's experience with invertebrate passage at a regulated surface water treatment plant which ultimately led to a new focus on treatment plant optimization

## 2.) Connecticut Dept. of Public Health Drinking Water Section:

- Responsible for ensuring quality and adequacy of public drinking water in Connecticut
- Primacy agency responsible for implementation and enforcement of Safe Drinking Water Act in Connecticut
- Regulates approximately 2,500 public water systems

### 3.) Connecticut's Surface Water Treatment Plants (SWTPs):

- •Serve a significant portion of Connecticut's population—approximately 64% or 2.4 million people
- .36 Surface Water Systems comprising 49 SWTPs
- Small package plants to full scale conventional plants
- .<1 MGD to 80 MGD capacity
- •DAF, ozone, membrane, slow sand filtration, deep bed GAC

### 4.) 2009—The Year of the Copepods!

- •Early that year DPH was notified by a system serving several hundred thousand people that copepods and rotifers were found in its distribution system
- Invertebrates that are traditionally viewed as aesthetic/nuisance concern
- Why did invertebrates pass filtration? Did giardia and crypto also pass through?
- •At the time SWTP was a 39 year old mono media rapid sand filtration plant
- SWTP had never incurred any Treatment Technique violations and was in regulatory compliance even during this event
- •Precautionary boil water advisory issued by system, concurred by CDC that it was prudent action
- •DPH conducted epidemiological review of area hospital admittance data for any increases in gastro-intestinal (GI) cases, nothing unusual detected
- System conducted comprehensive source to tap sampling for giardia and crypto as well as invertebrates
- No giardia/crypto detected but live copepods and rotifers found from source to distribution system
- Boil water advisory lifted after 5 days after conclusion that there was no apparent public health threat

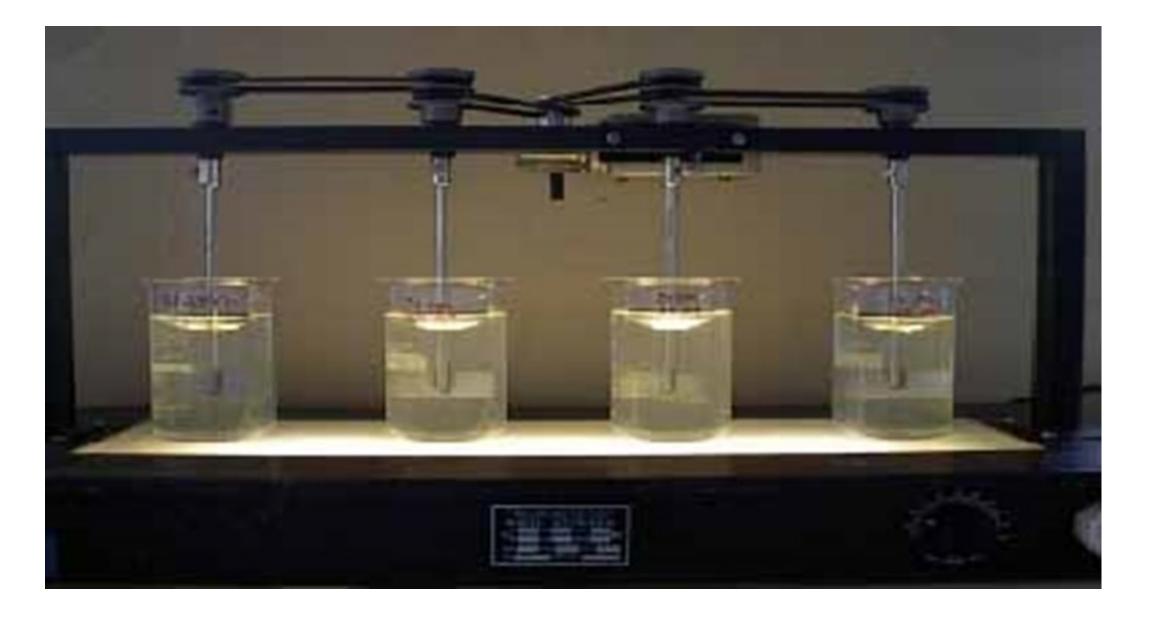




- Attention then shifted to cause
   -adequate backwashing of filters, filter
   loading rates, filter-to-waste capability, etc.
- Turbidity trending showed concerns with one filter
- All signs pointed towards treatment plant optimization!!!

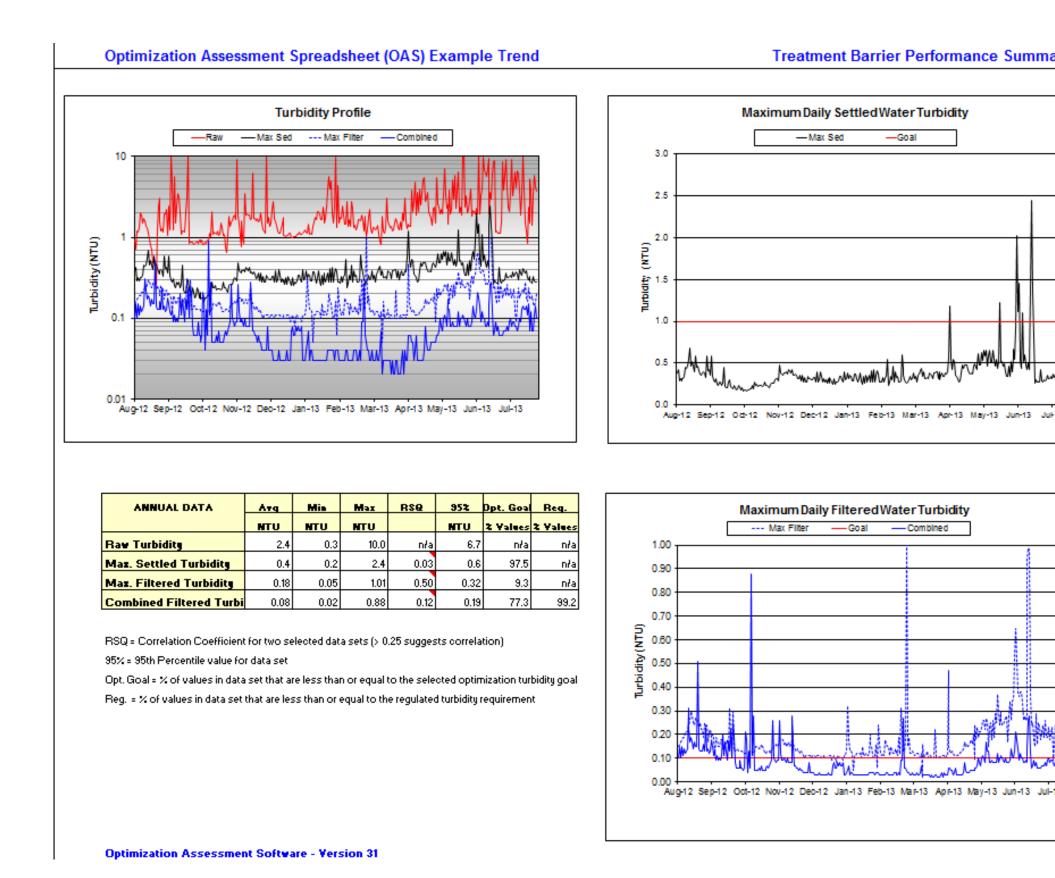
#### 5.) Why Optimize?

- •Experience has shown that simply meeting regulations does not ensure optimal plant performance, plants can still have performance issues
- Optimization can be viewed as a compliance assistance tool to identify problems before they become regulatory violations
- Provides increased public health protection
- Reinforces multiple barrier strategy to enhance plant performance via performance goals
- •Extreme weather events may lead to water quality changes in source waters



# 6.) Current Connecticut Dept. of Public Health Drinking Water Section Optimization Efforts:

- In process of formally adopting voluntary non-regulatory optimization goals:
- -Settled water turbidity less than or equal to 1 NTU
- -Filter effluent turbidity less than or equal to 0.10 NTU
- Enhanced sanitary surveys to focus more on optimization
- Joined EPA Region 3 Area Wide Optimization Program (AWOP)
- Working with interested SWTPs on implementing and improving optimization efforts at existing plants
- i.e. currently working with a SWTP to pilot Extended Terminal Sub-fluidization Wash (ETSW) to reduce post backwash turbidity spikes
- Provide tools to allow operators to trend performance data
   (OAS)



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